# Axtra3D:
# 3D Printer

NCMS Technology Showcase
FRC East

## PROBLEM STATEMENT

-The area of photopolymerization 3D printing is cluttered with numerous “me too” 3D printers.
-Traditional limitations create trade-offs per technology.
-With SLA, users choose accuracy over print throughput.
-With DLP/LCD, users choose throughput over accuracy and surface quality.
-In traditional LCD and DLP printers, the peel force of the film is very high which results in large hydrostatic forces that create uneven surfaces.

## BENEFITS

-The Lumia X1’s Hi-Speed SLA system overcomes traditional compromises between throughput, accuracy, feature resolution, and surface finish.
-Leveraging HPS and TruLayer technologies, the Lumia X1 achieves 2X- 20X faster print speeds compared to conventional DLP, LCD, and SLA printers.
-The Lumia X1 can print large cross-sections with a surface flatness of 20 microns, delivering parts with a highly polished, glass-like finish directly from the printer.
-Broad range of material suitable for various applications, and partnerships with leading material manufacturers.

## TECHNOLOGY SOLUTION

-Hybrid PhotoSynthesis (HPS) integrates a laser and a Digital Light Processing system to simultaneously image internal and external structures.
-TruLayer Seperation ensures seamless layer transitions by rapidly detaching the active print layer and moving to the next one.
TruLayer Apation ensures flatness of the glass plate for each layer by dynamically adjusting the plate to maintain the precise resin thickness required.
-Dual Z-axis ensures true vertical motion, eliminating unintentional pivots that could affect layer thickness, resulting in highly accurate and consistent prints, even with complex geometries.

## GRAPHIC